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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,020	12/14/2001	Syuichi Izuchi	Y31-138999C/KK	3545

7590 05/07/2003  
McGinn & Gibb  
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EXAMINER

TSANG FOSTER, SUSY N

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Applicant(s)

10/018,020

Applicant(s)

IZUCHI ET AL.

Examiner

Susy N Tsang-Foster

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2001 and 06 March 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5, 6. 6) ☐ Other:

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statements filed on 14 December 2001 and on 6 March 2002 have been considered by the Examiner.

### ***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 5, and 9-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 5, the limitation “wherein the organic solvent constituting said liquid electrolyte contains  $\gamma$ -butyrolactone in an amount of not smaller than 50% by weight” is indefinite because it is unclear what the weight percentage is based on.

Furthermore, claim 1 lacks antecedent basis for the limitation “the organic solvent” recited in claim 5.

In claim 9, the limitation “wherein the organic solvent constituting said liquid electrolyte contains  $\gamma$ -butyrolactone in an amount of not smaller than 50% by weight” is indefinite because it is unclear what the weight percentage is based on.

Furthermore, claim 2 lacks antecedent basis for the limitation “the organic solvent” recited in claim 9.

In claim 10, the limitation “wherein the organic solvent constituting said liquid electrolyte contains  $\gamma$ -butyrolactone in an amount of not smaller than 50% by weight” is indefinite because it is unclear what the weight percentage is based on.

Furthermore, claim 3 lacks antecedent basis for the limitation “the organic solvent” recited in claim 10.

In claim 11, the limitation “wherein the organic solvent constituting said liquid electrolyte contains  $\gamma$ -butyrolactone in an amount of not smaller than 50% by weight” is indefinite because it is unclear what the weight percentage is based on.

Furthermore, claim 4 lacks antecedent basis for the limitation “the organic solvent” recited in claim 11.

For the purposes of prosecution of instant claims 5 and 9-11, the weight percentage of the  $\gamma$ -butyrolactone is interpreted by the Examiner to be based on the total weight of the organic solvent in the liquid electrolyte.

*Claim Rejections - 35 USC § 102*

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 4, 5, 7, 9, and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Hasegawa et al. (US Patent No. 5,972,539).

Hasegawa et al. disclose a lithium battery having a power-generating element comprising a positive electrode, a negative electrode, and a gel electrolyte as a separator and the gel electrolyte comprises a polymer and a liquid electrolyte and the concentration of the lithium salt in the liquid electrolyte is 0.5 to 1 M (see col. 9, lines 1-52; col. 10, lines 28-47 and Figure 1). The unit M is equivalent to moles per liter of the liquid electrolyte.

The ratio by weight between the ion conductive polymer and the liquid electrolyte in the gel electrolyte is 10:90 to 90:10 (col. 9, lines 60-65) which is equal to 10 to 90% by weight of the polymer based on the sum of the weight of the polymer and the liquid electrolyte. In an specific example, a gel electrolyte is obtained by polymerizing a mixture of a monomer given by formula (IV) which has two polymerizable functional groups and a methyl methacrylate and the resulting

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copolymer is solvent casted into a film and dried (col. 13, lines 24-39). The dried copolymer film is immersed into a liquid electrolyte to form the gel electrolyte and the gel electrolyte contains 70 weight% liquid electrolyte and 30 weight % of the polymer (col. 13, lines 32-39).

The lithium salt in the liquid electrolyte can be  $\text{LiBF}_4$  and the organic solvent used in the liquid electrolyte can be  $\gamma$ -butyrolactone which would be 100% by weight of the organic solvent in the liquid electrolyte (col. 9, lines 25-34 and lines 53-60).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3, 6, 8, and 10 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hasegawa et al. (US Patent No. 5,972,539).

The product-by-process limitation "said gel electrolyte is obtained by hardening a mixture of a liquid electrolyte and a monomer having at least two polymerizable functional groups in its molecular chain" is not given patentable weight in product claims 3, 6, 8, and 10.

The product-by-process limitations of claims 3, 6, 8, and 10 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior

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art product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983)).

Hasegawa et al. disclose a lithium battery having a power-generating element comprising a positive electrode, a negative electrode, and a gel electrolyte as a separator and the gel electrolyte comprises a polymer and a liquid electrolyte and the concentration of the lithium salt in the liquid electrolyte is 0.5 to 1 M (see col. 9, lines 1-52; col. 10, lines 28-47 and Figure 1). The unit M is equivalent to moles per liter of the liquid electrolyte.

The ratio by weight between the ion conductive polymer and the liquid electrolyte in the gel electrolyte is 10:90 to 90:10 (col. 9, lines 60-65) which is equal to 10 to 90% by weight of the polymer based on the sum of the weight of the polymer and the liquid electrolyte. In an specific example, a gel electrolyte is obtained by polymerizing a mixture of a monomer given by formula (IV) which has two polymerizable functional groups and a methyl methacrylate and the resulting copolymer is solvent casted into a film and dried (col. 13, lines 24-39). The dried copolymer film is immersed into a liquid electrolyte to form the gel electrolyte and the gel electrolyte contains 70 weight% liquid electrolyte and 30 weight % of the polymer (col. 13, lines 32-39).

The lithium salt in the liquid electrolyte can be  $\text{LiBF}_4$  and the organic solvent used in the liquid electrolyte can be  $\gamma$ -butyrolactone which would be 100% by weight of the organic solvent in the liquid electrolyte (col. 9, lines 25-34 and lines 53-60).

### *Conclusion*

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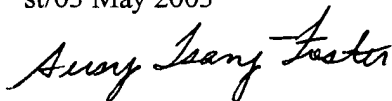
Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (703) 305-0588. The examiner can normally be reached on Monday through Thursday from 9:30 AM to 8:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9310 for regular communications and (703) 872-9311 for After-Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

st/03 May 2003

A handwritten signature in cursive script, reading "Susy Tsang-Foster".